

## CLAIMS

What is claimed is:

1. An automatic gain controller operating on a quadrature modulated communication signal having amplitude modulated and phase modulated components, comprising:

a limiting amplifier receiving the quadrature modulated communication signal for producing phase information corresponding to real and imaginary signal components of the quadrature modulated communication signal;

a logarithmic detector receiving the quadrature modulated communication signal for producing an analog representation of the power of the received signal;

outputs of said limiting amplifier and said logarithmic detector being utilized to reliably obtain amplitude modulated information from the quadrature modulated communication signal.

2. The automatic gain controller of claim 1 wherein analog-to-digital converters are utilized to convert the outputs of said limiting amplifier and logarithmic detector to enable manipulation of the outputs of the limiting amplifier and logarithmic detector in a digital format.

3. The automatic gain controller of claim 1 further comprising a demodulator coupled to said limiting amplifier for generating I and Q outputs derived from the output of said limiting amplifier.

4. The automatic gain controller of claim 3 further comprising analog-to-digital converters for respectively converting the outputs of the I and Q signals and the logarithmic detector to enable manipulation of the outputs of the demodulator and logarithmic converter in a digital format.

5. The automatic gain controller of claim 3 wherein said I signal has the form  $C \sin(\omega t + \alpha)$  and the Q signal has the form  $C \cos(\omega t + \alpha)$  where C is a constant and does not vary with power variation of the quadrature modulated communication signal.

6. The automatic gain controller of claim 1 wherein the logarithmic detector has a response time faster than 1 unit of transmitted information which may be a chip, a bit or a symbol.

7. The controller of claim 4 which includes a data manipulator for generating outputs representing the phase and amplitude information inputted to the controller in digital form.

8. The controller of claim 2 wherein the analog to digital converter coupled to the limiting amplifier has a sampling rate which is sufficiently high to provide digital conversion of the phase information to avoid the need for a demodulator.

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